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7590 12/05/2005  
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EXAMINER

MULL, FRED H

ART UNIT PAPER NUMBER

3662

DATE MAILED: 12/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/789,868

Applicant(s)

LAWRENCE ET AL.

Examiner

Fred H. Mull

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-37 and 39-41 is/are pending in the application.
- 4a) Of the above claim(s) 39-41 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 37 is/are allowed.
- 6) ☒ Claim(s) 1-3, 6, 7, 9, 14-18 and 25-30 is/are rejected.
- 7) ☒ Claim(s) 4, 5, 8, 10-13, 19-24 and 31-36 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-37, drawn to a system and method with one primary filter for each antenna for a primary frequency with a fewer number of secondary filters for a secondary frequency, classified in class 342, subclass 357.12.
  - II. Claim 39-41, drawn to calibrating biases for the information at a primary frequency with a RF path bias calibration algorithm as a function of output of a second filter, classified in class 342, subclass 174.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention II has separate utility such as calibrating systems such as DeWulf or Lin where there is the same number of secondary filters as primary filters. See MPEP § 806.05(d).
3. Because these inventions are distinct for the reasons given above and the search required for Group II is not required for Group I, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with Craig A. Summerfield on November 22, 2005 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-37. Affirmation of this election must be made by applicant in replying

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to this Office action. Claims 39-41 withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1, 3, 7, 15, 18, 26-28 and 30 are rejected under 35 U.S.C. 102(e) as being anticipated by Paschen.

In regard to claim 1, Paschen discloses:

a plurality of antennas (24, Fig. 1);

a plurality of primary filters, one primary filter for each antenna of the plurality of antennas, each filter operable to obtain information from a respective one of the plurality of antennas at a primary frequency (32); and

a fewer number of secondary filters than primary filters, the secondary filters operable to obtain information from the plurality of antennas at one or more secondary frequencies (Downconverter 60 provides a secondary (intermediate) frequency which then goes to filter 108, Fig. 2, where Fig. 2 is a blow up of 76 in Fig. 1. The information in the secondary frequency comes from the antennas.), the secondary filter connectable with the plurality of antennas, where the secondary filter is connected to the antennas via intermediary components (in much the same way applicant's secondary filters are connected to the antennas via intermediary components 104 and 112 in applicant's Fig. 1, and intermediary components 204 and 216 in applicant's Fig. 2).

In regard to claim 15, Pachen further discloses a second RF section operable to obtain the second frequency signals from the RF signals from at least two of the antennas (108, where signals from each of the antennas pass through 56).

In regard to claim 27, Pachen further discloses a common filter (108) multiplexed with each of the plurality of antennas (56).

In regard to claim 3, Pachen further discloses the fewer number of secondary filters comprises at least two secondary filters (108) and the plurality of primary filters comprises at least three primary filters, each of the primary filters connected with a different one of at least three antennas (32, 24).

In regard to claims 7 and 18, Pachen further discloses a multiplexer connected between the plurality of antennas and at least one of the secondary filters, the multiplexer operable to switch between individual ones of the plurality of antennas and output the selected one to the secondary filter (56).

In regard to claim 26, Pachen further discloses the plurality of antennas comprises three antennas (24, where “comprise” is an open ended term meaning “having at least”), the plurality of first RF sections comprises three first filters connected with the three antennas (32), respectively, and the second RF section is operable to obtain the second frequency signals from the RF signals from the three antennas (108, where signals from each of the antennas pass through 56).

In regard to claim 28, Pachen further discloses the plurality of antennas comprises all the antennas (24) and wherein (b) comprises obtaining information at the secondary frequency from all of the antennas with the common filter (all signals from the antennas pass through multiplexer 56 are downconverted to the secondary frequency at 60 and go to common filter 108).

In regard to claim 30, Pachen further discloses time division multiplexing the RF signals from the plurality of antennas to the common filter (56, 108).

7. Claims 1-3, 6, 9, 15, 17, 25-29 are rejected under 35 U.S.C. 102(e) as being anticipated by Wang.

In regard to claim 1, Wang discloses:

a plurality of antennas (201, Figs. 2A-1 and 3A);

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a plurality of primary filters, one primary filter for each antenna of the plurality of antennas, each filter operable to obtain information from a respective one of the plurality of antennas at a primary frequency (205); and

a fewer number of secondary filters than primary filters, the secondary filters operable to obtain information from the plurality of antennas at one or more secondary frequencies (Mixers 207 provide secondary frequencies which then goes to filter 213. The information in the secondary frequency comes from the antennas.), the secondary filter connectable with the plurality of antennas (211).

In regard to claim 15, Wang further discloses a second RF section operable to obtain the second frequency signals from the RF signals from at least two of the antennas (213, where signals from each of the antennas pass through 211).

In regard to claims 27-28, Wang further discloses a common filter (213) multiplexed (211) with each of the plurality of antennas (201).

In regard to claim 2, Wang further discloses the fewer number of secondary filters comprises a single secondary filter (213).

In regard to claims 3 and 17, Wang further discloses the fewer number of secondary filters comprises at least two secondary filters (213, 217) and the plurality of primary filters comprises at least three primary filters, each of the primary filters connected with a different one of at least three antennas (205, 201).

In regard to claims 6 and 29, Wang further discloses the plurality of antennas are operable to receive RF signals from satellites, the primary frequency being L1 and the secondary frequency being one of L2 and L5 (col. 6, lines 13-18).

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In regard to claim 9, Wang further discloses a processor operable to obtain position information as a function of the information at the primary frequency and the information at the secondary frequency (243, Fig. 2A-2; 255, Fig. 3B).

In regard to claims 14 and 25, Wang further discloses a clock common to the plurality of primary and secondary RF sections (col. 7, lines 10-14).

In regard to claim 26, Wang further discloses the plurality of antennas comprises three antennas (201, where “comprise” is an open ended term meaning “having at least”), the plurality of first RF sections comprises three first filters connected with the three antennas (205), respectively, and the second RF section is operable to obtain the second frequency signals from the RF signals from the three antennas (213, where signals from all of the antennas pass through 213).

8. Claims 15-17, 25-29 are rejected under 35 U.S.C. 102(e) as being anticipated by Wang (viewed differently).

In regard to claim 15, Wang discloses:

a plurality of antennas operable to receive RF signals, the RF signals comprising first and second frequency signals (201, Fig. 2A-1);

a plurality of first frequency RF sections operable to obtain the first frequency signals from the RF signals, each of the plurality of first frequency RF sections connected with a respective one of the plurality of antennas (205); and

a second RF section operable to obtain the second frequency signals from the RF signals from at least two of the antennas (227<sub>1</sub>), where 227<sub>1</sub> receives a signal via



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the top input of 225<sub>1</sub> from 201<sub>1</sub> and a signal via the bottom input of 225<sub>1</sub> from all of the antennas.

In regard to claim 16, Wang further discloses:

at least three antennas (201), wherein the plurality of first frequency RF sections comprises at least three first frequency RF sections (201), and wherein the RF signals comprise third frequency signals (227<sub>2</sub>); and

wherein the system further comprises a third RF section operable to obtain the third frequency signals from the RF signals from at least two of the antennas (227<sub>2</sub>).

In regard to claim 17, Wang further discloses the fewer number of secondary filters comprises at least two secondary filters (213, 217) and the plurality of primary filters comprises at least three primary filters, each of the primary filters connected with a different one of at least three antennas (205, 201).

In regard to claim 25, Wang further discloses a clock common to the plurality of primary and secondary RF sections (col. 7, lines 10-14).

In regard to claim 26, Wang further discloses the plurality of antennas comprises three antennas (201, where “comprise” is an open ended term meaning “having at least”), the plurality of first RF sections comprises three first filters connected with the three antennas (205), respectively, and the second RF section is operable to obtain the second frequency signals from the RF signals from the three antennas (227<sub>1</sub>, where signals from all of the antennas pass through 227<sub>1</sub> via the bottom input for 225<sub>1</sub>).

In regard to claims 27-28, Wang further discloses a common filter (227<sub>1</sub>) multiplexed (211) with each of the plurality of antennas (201).

In regard to claim 29, Wang further discloses the plurality of antennas are operable to receive RF signals from satellites, the primary frequency being L1 and the secondary frequency being one of L2 and L5 (col. 6, lines 13-18).

9. Claims 1, 3, 14-17, and 25-26, are rejected under 35 U.S.C. 102(b) as being anticipated by Shimura.

In regard to claim 1, Shimura discloses:

a plurality of antennas (55-58, Fig. 2);

a plurality of primary filters, one primary filter for each antenna of the plurality of antennas, each filter operable to obtain information from a respective one of the plurality of antennas at a primary frequency (59-62); and

a fewer number of secondary filters than primary filters, the secondary filters operable to obtain information from the plurality of antennas at one or more secondary frequencies (68, where the information in the secondary frequency comes from the antennas), the secondary filter connectable with the plurality of antennas, where the secondary filter is connected to the antennas via intermediary components (in much the same way applicant's secondary filters are connected to the antennas via intermediary components 104 and 112 in applicant's Fig. 1, and intermediary components 204 and 216 in applicant's Fig. 2).

In regard to claim 15, Shimura further discloses a second RF section operable to obtain the second frequency signals from the RF signals from at least two of the antennas (68, where signals from antennas 59-62 pass through 67).

In regard to claims 3 and 17, Shimura further discloses the fewer number of secondary filters comprises at least two secondary filters (54, 68) and the plurality of primary filters comprises at least three primary filters, each of the primary filters connected with a different one of at least three antennas (55-58).

In regard to claims 14 and 25, Shimura further discloses a clock common to the plurality of primary and secondary RF sections (col. 4, lines 33-44).

In regard to claim 16, Shimura further discloses:

at least three antennas (51, 55-58), wherein the plurality of first frequency RF sections comprises at least three first frequency RF sections (51, 55-58), and wherein the RF signals comprise third frequency signals (63); and

wherein the system further comprises a third RF section operable to obtain the third frequency signals from the RF signals from at least two of the antennas (68, where 52, 59-62 obtain the first frequency and 54 obtains the second frequency).

In regard to claim 26, Shimura further discloses the plurality of antennas comprises three antennas (55-58, where "comprise" is an open ended term meaning "having at least"), the plurality of first RF sections comprises three first filters connected with the three antennas (59-62), respectively, and the second RF section is operable to obtain the second frequency signals from the RF signals from the three antennas (68).

10. The examiner also finds the following reference(s) relevant:

DeWulf, which discloses a dual-frequency GPS system with a combined L1/L2 filters for each antenna (160, Fig. 1).

Lin, which discloses a dual-frequency GPS system with a L1 filter for each antenna and a L2 filter for each antenna (Fig. 4).

Lawrence, which discloses a single antenna dual-frequency GPS system which multiplexes the L2 and L5 frequency signals (Fig. 1).

Applicant is encouraged to consider these documents in formulating their response (if one is required) to this action, in order to expedite prosecution of this application.

***Allowable Subject Matter***

11. Claim(s) 37 is/are allowed.

12. Claim(s) 4-5, 8, 10-13, 19-24, 31-36 is/are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred H. Mull whose telephone number is 571-272-6975. The examiner can normally be reached on M-F 9:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas H. Tarcza can be reached on 571-272-6979. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Fred H. Mull  
Examiner  
Art Unit 3662

fhm

  
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